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JONES DAY 222 EAST 41ST ST NEW YORK, NY 10017			KASSA, JESSICA M	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/593,078	Applicant(s) NADEN ET AL.	
	Examiner JESSICA M. KASSA	Art Unit 4131	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-23 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/15/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. **Claims 1-23 are pending and are under consideration in the instant office action.**

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 09/15/2009 was filed. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Objections

4. Claim 16 objected to because of the following informalities: The claim states "30 to 70:30 to 70%" which is redundant. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Instant claim 16 recites a range; however, a range is not included in the claim. Instead, the claim states “30 to 70:30 to 70%” which constitutes a ratio which is reported in a redundant manner.

7. Claims 22-23 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claims 22-23 provide for the use of a dispersion comprising metal oxide particles, a polar solvent, and a nonpolar solvent, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9. Claims 22-23 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-12, 20 and 22-23 rejected under 35 U.S.C. 102(b) as being anticipated by Kessell (WO 03/041677 A2).

12. Applicants claim a dispersion comprising a polar, a nonpolar medium and metal oxide particles with a median particle diameter of 24-42 nm. In further limitations, the crystal size (instant claims 2-3), median particle diameter (instant claims 4-7, and 11), and extinction coefficients (instant claims 8-10 and 12) of the metal oxide particles are specified. Instant claim 16 specifies the ratio of polar to nonpolar materials of claim 1 as 30 to 70% by weight. Instant claim 20 recites a sunscreen product formed from a dispersion comprising a polar, a nonpolar medium and metal oxide particles with a median particle diameter of 24-42 nm. Instant claims 22-23 specify the use of the dispersion to produce a sunscreen.

13. Kessell discloses a metal oxide dispersion for use in a sunscreen product (abstract). The median particle volume diameter of the metal oxides is preferably less than 45 nm (page 2, lines 1-2 and 7-8). More specifically, the metal oxide dispersion has a median volume particle diameter particularly between 20 and 30 nm or especially between 24-27 nm (page 5, lines 30 and 35). The metal oxide particle size distribution is preferably narrow having no more than 16% of particles with a volume diameter less

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than 25 nm and more than 84% of particles having a volume diameter of preferably less than 40 nm (page 6 lines 1-3 and 5-6). The extinction coefficient of the particles at 524 nm is 0.7-1.0 l/g/cm (page 6, lines 29 and 34), at 360 nm is 6-7.5 l/g/cm (page 6 line 37 and page 7 lines 1-2), at 308 nm and a maximum extinction coefficient of 60-70 l/g/cm between 275 and 280 nm. Compositions disclosed include titanium dioxide in both polar (e.g. water and stearyl alcohol) and nonpolar (e.g. petroleum jelly) media (page 17, lines 11, 14, 20, and 21). Long chain alcohols such as stearyl alcohol have low interfacial tensions with respect to water (i.e. less than 30 mN/m) as evidenced by Villers et al. in "Temperature Dependence of the Interfacial Tension between Water and Long Chain Alcohols" (J. Phys. Chem. 1988, 92, 4023-4024). Petroleum jelly, on the other hand has an interfacial tension of 0.035-0.050 N/m (35-50mN/m) (Physical and Chemical Properties 9.8) as evidenced by Cameo Chemicals: Petrolatum datasheet CHRIS code PTL (Office of Response and Restoration, NOAA's Ocean Service, National Oceanic and Atmospheric Administration; June 1999; <http://cameochemicals.noaa.gov/chris/PTL.pdf>, accessed April 8, 2009). The examiner also notes that water would have an interfacial tension of less than 30 mN/m with respect to water. Kessell discloses the use of anatase or rutile crystal forms of titanium dioxide (page 2, line 32) which have a mean length of 50-90 nm and a mean width of 5-20 nm (page 4 lines 30-32). Since these are the same crystal forms and dimensions disclosed in the specification of the instantly claimed invention (page 2, line 33 and page 4, lines 24-25 and lines 26-27), the mean crystal size of the titanium dioxide disclosed by Kessell and in the instantly claimed invention are expected to be the same.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

15. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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16. Claims 1-17, 19-20, and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kessell (WO 03/041677 A2), and further in view of Uniqema: Product catalog and formulation guide: Tioviel MOTG (applicant submitted prior art).

Applicants' claims

17. Applicants claim a dispersion comprising a polar medium, a nonpolar medium and metal oxide particles with a median particle diameter of 24-42 nm. In further limitations, the crystal size (instant claims 2-3), median particle diameter (instant claims 4-7, and 11), and extinction coefficients (instant claims 8-10 and 12) of the metal oxide particles are specified. Other limitations include further specification of the polar and nonpolar materials used in the dispersion (instant claims 13-15, 17, and 19). Instant claim 20 recites a sunscreen product formed from a dispersion comprising a polar, a nonpolar medium and metal oxide particles with a median particle diameter of 24-42 nm. Instant claims 22-23 specify the use of the dispersion to produce a sunscreen.

Determination of the Scope and Content of the Prior Art

(MPEP 2141.01)

18. The teachings of Kessell are disclosed above.

Ascertainment of the Difference Between Scope of the Prior Art and the Claims

(MPEP 2141.02)

19. Kessell does not disclose the specific polar and nonpolar solvents specified in the instantly claimed invention. This deficiency is cured by Uniqema: Product catalog and formulation guide: Tioviel MOTG.

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20. Tioviel MOTG is a commercially available composition comprising titanium dioxide, caprylic/capric triglyceride, and mineral oil which is an inorganic UV filter with light skin feel and good spreading properties (product summary and INCI name of Ingredients).

Finding of Prima Facie Obviousness Rational and Motivation

(MPEP 2142-2143)

21. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Kessell to include, e.g., both caprylic/capric triglyceride and mineral oil which applicant discloses as acceptable polar and nonpolar materials, respectively. Both caprylic/capric triglyceride and mineral oil are known in the art as suitable ingredients for lotions, cosmetics, and other personal care applications. The skilled artisan would have been motivated to include caprylic/capric triglyceride and mineral oil since they are readily available and clearly suitable for use with titanium dioxide compositions designed for application to skin as taught by the Uniqema: product catalog and formulation guide. The skilled artisan would have a reasonable chance of success because both the compositions of Kessell and the tioveil MOTG available from Uniqema are similar metal oxide dispersions comprising both polar and nonpolar media.

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22. Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gers-Barlag et al. (US Patent 6838088 B2) in view of Kessell et al. (WO 03/041677 A2).

Applicants' claims

23. Applicants claim a dispersion comprising a polar, a nonpolar medium and metal oxide particles with a median particle diameter of 24-42 nm. In further limitations, the crystal size (instant claims 2-3), median particle diameter (instant claims 4-7, and 11), and extinction coefficients (instant claims 8-10 and 12) of the metal oxide particles are specified. Other limitations include further specification of the polar and nonpolar materials used in the dispersion (instant claims 13-15 and 17-19). Instant claim 16 specifies the ratio of polar to nonpolar media of claim 1 as 30 to 70% by weight. Instant claims 20 and 21 recite a sunscreen product formed from a dispersion comprising a polar, a nonpolar medium and metal oxide particles with a median particle diameter of 24-42 nm wherein claim 21 further specifies the polar and nonpolar media. Instant claims 22-23 specify the use of the dispersion to produce a sunscreen.

Determination of the Scope and Content of the Prior Art

(MPEP 2141.01)

24. Gers-Barlag et al. disclose Pickering emulsions comprising microfine particles which are advantageously between 5 and 100 nm (abstract and column 5, lines 50 and 52). These emulsions may be used as sunscreens (column 10 lines 56-57). Specifically, example 1 comprises titanium dioxide and zinc oxide particles, caprylic/capric triglyceride, mineral oil, hydrogenated polyisobutene, isohexadecane and

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other components. The examiner calculates that the ratio of polar (caprylic/capric triglyceride) to nonpolar (mineral oil, hydrogenated polyisobutene, and isohexadecane) media is 25 to 75% (column 14, table). The compositions disclosed by Gers-Barlag et al. may also contain C₁₂₋₁₅ alkyl benzoate and mineral oil (column 14, table). The examiner notes that extinction coefficients of the metal oxide particles and the interfacial surface tension of the solvents are inherent properties.

Ascertainment of the Difference Between Scope of the Prior Art and the Claims

(MPEP 2141.02)

25. The instantly claimed median volume particle diameter lies within the range taught by Gers-Barlag et al. The instantly claimed ratio of polar to nonpolar material deviates slightly from that taught by Gers-Barlag et al.

26. Kessell discloses a metal oxide dispersion for use in a sunscreen product (abstract). The median particle volume diameter of the metal oxides is preferably less than 45 nm (page 2, lines 1-2 and 7-8). More specifically, the metal oxide dispersion has a median volume particle diameter particularly between 20 and 30 nm or especially between 24-27 nm (page 5, lines 30 and 35). The metal oxide particle size distribution is preferably narrow having no more than 16% of particles with a volume diameter less than 25 nm and more than 84% of particles having a volume diameter of preferably less than 40 nm (page 6 lines 1-3 and 5-6). The extinction coefficient of the particles at 524 nm is 0.7-1.0 l/g/cm (page 6, lines 29 and 34), at 360 nm is 6-7.5 l/g/cm (page 6 line 37 and page 7 lines 1-2), at 308 nm and a maximum extinction coefficient of 60-70 l/g/cm

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between 275 and 280 nm. Compositions disclosed include titanium dioxide in both polar and nonpolar media (page 17, lines 11, 14, 20, and 21).

Finding of Prima Facie Obviousness Rational and Motivation
(MPEP 2142-2143)

27. It would have been prima facie obvious to one of ordinary skill in the art at the time of the present invention in order to further optimize the particle sizes of the metal oxide particles in order to ensure optimal sun screening and cosmetic properties.

Moreover routine optimization is within the purview of the skilled artisan. The skilled artisan would have been motivated to optimize the particle sizes to produce a more transparent sun screening composition with broad ultraviolet light protection as taught by Kessell (page 1, lines 17-18 and lines 32-33).

28. Additionally, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ratio of polar to nonpolar media because routine optimization is within the purview of the skilled artisan. The skilled artisan would have been motivated to optimize the ratio of polar to nonpolar media to thereby optimize the properties of the composition (i.e. stability, skin feel, etc.). The skilled artisan would have a reasonable expectation of success because the ratio taught by Gers-Barlag et al. is close to the instantly claimed ratio.

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29. Claims 1-16, 18-20 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ha et al. (US Patent 5997887), and further in view of Kessell (WO 03/041677 A2).

Applicants' claims

30. Applicants claim a dispersion comprising a polar medium, a nonpolar medium and metal oxide particles with a median particle diameter of 24-42 nm. In further limitations, the crystal size (instant claims 2-3), median particle diameter (instant claims 4-7, and 11), and extinction coefficients (instant claims 8-10 and 12) of the metal oxide particles are specified. Other limitations include further specification of the polar and nonpolar materials used in the dispersion (instant claims 13-15 and 18-19). Instant claim 16 specifies the ratio of polar to nonpolar material as 30 to 70% by weight. Instant claim 20 recites a sunscreen product formed from a dispersion comprising a polar, a nonpolar medium and metal oxide particles with a median particle diameter of 24-42 nm. Instant claims 22-23 specify the use of the dispersion to produce a sunscreen.

Determination of the Scope and Content of the Prior Art

(MPEP 2141.01)

31. Ha et al. disclose a cosmetic composition which contains reflective particles (e.g. titanium dioxide) (abstract and column 2, lines 40-43). The compositions may be used as sunscreens (column 31, lines 48-49). The composition may also contain isopropyl isostearate, isohexadecane, caprylic/capric triglycerides (column 38, lines 17 and 20, column 40, lines 52, 54-56 and column 41, lines 41 and 43). (The examiner notes that Kobo GLW75CA and Kobo BG60DC contain titanium dioxide.) In examples 8 and 9,

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the ratio of isopropyl isostearate (polar) to isohexadecane (nonpolar) is 30.7 to 69.3% as calculated by the examiner (column 41, lines 41 and 43). The examiner notes that extinction coefficients of the metal oxide particles and the interfacial surface tension of the solvents are inherent properties.

***Ascertainment of the Difference Between Scope of the Prior Art and the Claims
(MPEP 2141.02)***

32. The particle sizes of the titanium dioxide are not specified by Ha et al. Additionally, the ratio of polar to nonpolar media deviates slightly from the instantly claimed ratio.

33. Kessell discloses a metal oxide dispersion for use in a sunscreen product (abstract). The median particle volume diameter of the metal oxides is preferably less than 45 nm (page 2, lines 1-2 and 7-8). More specifically, the metal oxide dispersion has a median volume particle diameter particularly between 20 and 30 nm or especially between 24-27 nm (page 5, lines 30 and 35). The metal oxide particle size distribution is preferably narrow having no more than 16% of particles with a volume diameter less than 25 nm and more than 84% of particles having a volume diameter of preferably less than 40 nm (page 6 lines 1-3 and 5-6). The extinction coefficient of the particles at 524 nm is 0.7-1.0 l/g/cm (page 6, lines 29 and 34), at 360 nm is 6-7.5 l/g/cm (page 6 line 37 and page 7 lines 1-2), at 308 nm and a maximum extinction coefficient of 60-70 l/g/cm between 275 and 280 nm. Compositions disclosed include titanium dioxide in both polar and nonpolar media (page 17, lines 11, 14, 20, and 21).

Finding of Prima Facie Obviousness Rational and Motivation
(MPEP 2142-2143)

34. It would have been prima facie obvious to one of ordinary skill in the art at the time of the present invention in order to further optimize the particle sizes of the metal oxide particles in order to ensure optimal sun screening and cosmetic properties.

Moreover routine optimization is within the purview of the skilled artisan. The skilled artisan would have been motivated to optimize the particle sizes to produce a more transparent sun screening composition with broad ultraviolet light protection as taught by Kessell (page 1, lines 17-18 and lines 32-33).

35. Additionally, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ratio of polar to nonpolar media because routine optimization is within the purview of the skilled artisan. The skilled artisan would have been motivated to optimize the ratio of polar to nonpolar media to thereby optimize the properties of the composition (i.e. stability, skin feel, etc.). The skilled artisan would have a reasonable expectation of success because the ratio taught by Ha et al. is close to the instantly claimed ratio.

Double Patenting

36. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

37. Instant claims 1 and 20 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, and 4-9 of copending Application No. 10/495490 (Kessell) in view of Uniqema: Product catalog and formulation guide: Tioviel MOTG (applicant submitted prior art). Instant claims 8-10 and 12 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 3 and 18-19 of copending Application No. 10/495490 in view of Uniqema: Product catalog and formulation guide: Tioviel MOTG (applicant submitted prior art). Instant claims 4 and 6 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being

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unpatentable over claims 10 and 11, respectively, of copending Application No. 10/495490 in view of Uniqema: Product catalog and formulation guide: Tioviel MOTG (applicant submitted prior art). Instant claim 11 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 10 and 11 of copending Application No. 10/495490 in view of Uniqema: Product catalog and formulation guide: Tioviel MOTG (applicant submitted prior art). Instant claim 17 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 27 and 29 of copending Application No. 10/495490 in view of Uniqema: Product catalog and formulation guide: Tioviel MOTG (applicant submitted prior art).

Applicants' claims

38. Applicants claim a dispersion comprising a polar, a nonpolar medium and metal oxide particles with a median particle diameter of 24-42 nm. In further limitations, the median particle diameter (instant claims 4, 6, and 11), and extinction coefficients (instant claims 8-10 and 12) of the metal oxide particles are specified. Instant claim 17 specifies the polar media used in the dispersion. Instant claim 20 recites a sunscreen product formed from a dispersion comprising a polar, a nonpolar medium and metal oxide particles with a median particle diameter of 24-42 nm.

Determination of the Scope and Content of the Prior Art

(MPEP 2141.01)

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39. Kessell claims compositions which comprise metal oxide particles and a non-ionic surfactant which would be suitable for use in, e.g., sunscreens (claims 1, 2 and 4). Although claims 1, 2 and 4 of Kessell also contain limitations regarding the metal oxide particles (i.e. *hydrophobic* particles of metal oxide having *primary particles* and *secondary particles*, emphasis added) which are not found in the instantly claimed invention, those limitations would not preclude their use in the instantly claimed invention. The non-ionic surfactant which is specified in claims 27-29 of Kessell as having an HLB value of 7-18 may be the same component as the polar medium claimed in the instant application. For example, caprylic/capric triglyceride is claimed as a suitable polar media in the instantly claimed invention and is also a surfactant with an HLB value between 7 and 18 as evidenced by Chorpa et al. (US Patent 6426062 B1; column 8, lines 5-6 and 19-20). The instantly claimed ranges for both the particle diameters and the extinction coefficients are either anticipated by or overlap with the claimed ranges of Kessell (Kessell, claims 3 and 18-19 and claims 1, 2, and 4-11, respectively). The examiner notes that specification of the mean width and length of the metal oxide particles would inherently specify the median particle diameter.

Ascertainment of the Difference Between Scope of the Prior Art and the Claims

(MPEP 2141.02)

40. Although the examples of in the specification of Kessell include nonpolar media in the compositions, no nonpolar media are explicitly claimed. This deficiency is cured by Uniqema: Product catalog and formulation guide: Tioviel MOTG.

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41. Tioviel MOTG is a commercially available composition comprising titanium dioxide, caprylic/capric triglyceride, and mineral oil which is an inorganic UV filter with light skin feel and good spreading properties (product summary and INCI name of Ingredients).

Finding of Prima Facie Obviousness Rational and Motivation

(MPEP 2142-2143)

42. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Kessell et al. to include, e.g., both caprylic/capric triglyceride and mineral oil which applicant discloses as acceptable polar and nonpolar materials, respectively. Both caprylic/capric triglyceride and mineral oil are known in the art as suitable ingredients for lotions, cosmetics, and other personal care applications. The skilled artisan would have been motivated to include caprylic/capric triglyceride and mineral oil since they are readily available and clearly suitable for use with titanium dioxide compositions designed for application to skin as taught by the Uniqema: product catalog and formulation guide. The skilled artisan would have a reasonable chance of success because both the compositions of Kessell et al. and the tioveil MOTG available from Uniqema are similar metal oxide dispersions comprising both polar and nonpolar media.

This is a provisional obviousness-type double patenting rejection.

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43. Instant claims 1 and 20 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-2 and 4-6 of copending Application No. 10/574983 (Kessell et al.). Instant claims 4-7 and 11 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 7 and 8 of copending Application No. 10/574983. Instant claims 8-10 and 12 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 9 and 10 of copending Application No. 10/574983. Instant claim 17 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 12-15 of copending Application No. 10/574983.

Applicants' claims

44. Applicants claim a dispersion comprising a polar, a nonpolar medium and metal oxide particles with a median particle diameter of 24-42 nm. In further limitations, the median particle diameter (instant claims 4-7, and 11), and extinction coefficients (instant claims 8-10 and 12) of the metal oxide particles are specified. Instant claim 17 specifies the polar media used in the dispersion. Instant claim 20 recites a sunscreen product formed from a dispersion comprising a polar, a nonpolar medium and metal oxide particles with a median particle diameter of 24-42 nm.

Determination of the Scope and Content of the Prior Art

(MPEP 2141.01)

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45. Kessell et al. claims a water-in-silicone oil emulsion comprising metal oxide particles, silicone oil, and water (claim 1). Water-in-silicone oil emulsions are known in the art as being suitable for cosmetic compositions and the addition of metal oxides would constitute a sunscreen as evidenced by Dahms (US Patent 5543135, column 1, lines 17-20; column 3, lines 5-8; US Patent 5543135). The examiner notes that titanium dioxide is a metal oxide which is commonly used in sunscreen compositions.

Additionally, the examiner notes that water is a polar medium which would have an interfacial tension of 0 with respect to water while silicone oil (e.g. polydimethyl siloxane) is a nonpolar medium with an interfacial tension of more than 30 mN/m relative to water as evidence by D.O.R.C. silicone oil, 5000csts. product information (Sil-5000® silicone oil; <http://www.dorc.nl/products.php?group=18143,18208,18407,18409>; accessed 4/9/200). The instantly claimed ranges for both the particle diameters and the extinction coefficients are either anticipated by or overlap with the ranges claimed by Kessell et al. (Kessell et al., claims 1 and 4-8, and claims 9-10, respectively).

Specification of the mean width and length of the metal oxide particles would inherently specify the median particle diameter. Claims 12-15 of Kessell et al. specify the inclusion of an aqueous dispersion agent and/or an emulsifier which may be the same as the polar media of instant claim 7 (e.g. caprylic/capric triglyceride).

Ascertainment of the Difference Between Scope of the Prior Art and the Claims

(MPEP 2141.02)

46. The instantly claimed ranges are not exactly the same as the ranges disclosed by Kessell et al. Kessell et al. also claim additional limitations such specifying water

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and silicone oil (polar and nonpolar media, respectively) at the weight percentages of the components.

Finding of Prima Facie Obviousness Rational and Motivation

(MPEP 2142-2143)

47. Where the instantly claimed ranges differ from those claimed by Kessell et al., they are still sufficiently close as to render obvious the instantly claimed ranges. The examiner also notes that it is within the purview of the skilled artisan to further optimize the ranges for particle diameter and extinction coefficient.

48. The examiner also notes that none of the additional limitations found in Kessell et al. would preclude their use in the instantly claimed invention.

This is a provisional obviousness-type double patenting rejection.

49. Instant claims 8-10 and 12 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-10, 28-30, and 38-43 of U.S. Patent No. 7101427 B2 in view of Uniqema: Product catalog and formulation guide: Tioviel MOTG (applicant submitted prior art). Instant claims 1, 4-7, 11, and 20 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 11-25 of U.S. Patent No. 7101427 B2 in view of Uniqema: Product catalog and formulation guide: Tioviel MOTG (applicant submitted prior art).

Applicants' claims

50. Applicants claim a dispersion comprising a polar, a nonpolar medium and metal oxide particles with a median particle diameter of 24-42 nm. In further limitations, the

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median particle diameter (instant claims 4-7, and 11), and extinction coefficients (instant claims 8-10 and 12) of the metal oxide particles are specified. Instant claim 20 recites a sunscreen product formed from a dispersion comprising a polar, a nonpolar medium and metal oxide particles with a median particle diameter of 24-42 nm.

Determination of the Scope and Content of the Prior Art

(MPEP 2141.01)

51. Dransfield et al. claim metal oxide particles with specified extinction coefficients (claims 1-10, 28-30, and 38-43) which may be coated (claims 11-25 and 38-43). Claims 41 and 42 further specify the metal oxide particles as part of a dispersion or sunscreen, respectively. Claims 11-25 specify the median volume particle diameter or the mean length and width of the particles which would inherently specify the median volume particle diameter.

Ascertainment of the Difference Between Scope of the Prior Art and the Claims

(MPEP 2141.02)

52. Most of the claims are directed to the metal oxide particles specifically. Although Drainsfield et al. claim a dispersion comprising a dispersing medium and a dispersing agent, the dispersing medium and agent are not specified as polar and nonpolar media. Drainsfield et al. do not specify additional components in the sunscreen composition. This deficiency is cured by Uniqema: Product catalog and formulation guide: Tioviel MOTG.

53. Tioviel MOTG is a commercially available composition comprising titanium dioxide, caprylic/capric triglyceride, and mineral oil which is an inorganic UV filter with

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light skin feel and good spreading properties (product summary and INCI name of Ingredients).

Finding of Prima Facie Obviousness Rational and Motivation

(MPEP 2142-2143)

54. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Kessell to include, e.g., both caprylic/capric triglyceride and mineral oil to form a dispersion/sunscreen. Both caprylic/capric triglyceride and mineral oil are known in the art as suitable ingredients for lotions, cosmetics, and other personal care applications. The skilled artisan would have been motivated to include caprylic/capric triglyceride and mineral oil since they are readily available and clearly suitable for use with titanium dioxide compositions designed for application to skin as taught by the Uniqema: product catalog and formulation guide. The skilled artisan would have a reasonable chance of success because metal oxide dispersions are well known in the art for use as sunscreens. Moreover caprylic/capric triglyceride and mineral oil are disclosed by Drainsfield et al. as suitable media for the metal oxide compositions (column 6, lines 18 and 22 and column 7, line 7).

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Conclusion

Claims 1-23 are pending. No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JESSICA M. KASSA whose telephone number is 571-270-1342. The examiner can normally be reached on Monday-Friday 7:30am-5:00am.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James O. Wilson can be reached on 571-272-0661. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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